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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/648,534	08/25/2003	Masato Ueda	47539.27	4653

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EXAMINER

GORDON, RAQUEL YVETTE

ART UNIT	PAPER NUMBER
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2853

DATE MAILED: 02/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 10/648,534	Applicant(s) UEDA, MASATO	
	Examiner Raquel Y. Gordon	Art Unit 2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 8/25/2005 (this application).
 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 11-17 and 25-28 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) ☐ Claim(s) _____ is/are allowed.
 6) ☐ Claim(s) _____ is/are rejected.
 7) ☒ Claim(s) 4-10 and 18-24 is/are objected to.
 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
 10) ☒ The drawing(s) filed on 25 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some * c) ☐ None of:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Claim Rejections - 35 USC § 112

Claims 11 and 25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

For example, it is unclear as to what is meant by "thin plate shape." For the purpose of examination, the Examiner is treating "thin plate shape" as a thin, conically-shaped surface.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 11-17 and 25-28 rejected under 35 U.S.C. 103(a) as being unpatentable over Misumi et al. (US 2002/0024560). Misumi et al. teach every element of the instant claims:

1. An ink jet head comprising: a nozzle tip (4) comprising a front end surface (see fig 11) in which a nozzle for jetting ink is provided, and four side surfaces (see 4 side surfaces of channel 3) adjacent to a back end surface (back of tip 4) which is opposite

to the nozzle; and a frame shape member (channel 3) on which the nozzle tip (4) is mounted (see fig 3);

2. The ink jet head of claim 1, wherein the nozzle tip comprises an electrode terminal (10) on a central portion of the one pair of facing sides, and the first protrusion pair abuts on a portion of the one pair of facing sides on which no electrode terminal is provided to sandwich the nozzle tip (see fig 9);

3. The ink jet head of claim 1, wherein the frame shape member comprises an abutment portion on which the back end surface of the nozzle tip abuts(see substrate 1 and top plate 2);

11. The ink jet head of claim 1, wherein the nozzle tip has a thin plate shape (4);

12. The ink jet head of claim 1, wherein the back end surface of the nozzle tip has a uniform width (see face abutting the back end of the nozzle tip 4 in figure 3);

13. The ink jet head of claim 1, wherein a width of the back end surface of the nozzle tip is smaller than a width of the front end surface (see conically shaped tip 4 in figure 3);

14. The ink jet head of claim 1, wherein a piezoelectric element of shear mode type is built in the ink jet head (10, 11);

15. An ink jet printer comprising: an ink jet head which comprises a nozzle tip (4) comprising a front end surface in which a nozzle (4) for jetting ink is provided and four side surfaces (see 4 side surfaces of channel 3) adjacent to a back end surface which is opposite to the nozzle, and a frame shape member (channel 3) for mounting the nozzle tip; and a carriage (115) on which the ink jet head is mounted in a state pre-positioned (see figure 12);

16. The ink jet printer of claim 15, wherein the nozzle tip comprises an electrode terminal (10) on a central portion of the one pair of facing sides, and the first protrusion pair abuts on a portion of the one pair of facing side on which no electrode terminal is provided to sandwich the nozzle tip (see fig 9);

17. The ink jet printer of claim 15, wherein the frame shape member comprises an abutment portion on which the back end surface of the nozzle tip abuts (see substrate 1 and top plate 2);

25. The ink jet printer of claim 15, wherein the nozzle tip has a thin plate shape (4);

26. The ink jet printer of claim 15, wherein the back end surface of the nozzle tip has a uniform width (see face abutting the back end of the nozzle tip 4 in figure 3);

27. The ink jet printer of claim 15, wherein a width of the back end surface of the nozzle tip is smaller than a width of the front end surface (see conically shaped tip 4 in figure 3);

28. The ink jet printer of claim 15, wherein a piezoelectric element of shear mode type is built in the ink jet head (10, 11).

However, Misumi et al. does not explicitly teach the difference of the frame shape member comprising a first protrusion pair which abuts on one pair of facing sides of the four side surfaces to sandwich the nozzle tip, and a second protrusion pair which abuts on the other pair of facing sides of the four side surfaces to sandwich the nozzle tip, as presented in claims 1 and 15.

Nevertheless, Misumi et al. do teach the claimed invention. since Misumi et al. shows in different views the pairs of surfaces surrounding the nozzle tip 4. For example, Misumi et al. teach the frame shape member comprising a first protrusion pair (the two protrusion pairs surrounding either side of element 4 in figure 8) which abuts on one pair of facing sides of the four side surfaces to sandwich the nozzle tip, and a second protrusion pair which abuts on the

other pair of facing sides of the four side surfaces to sandwich the nozzle tip
(Protrusion pair 5a in fig 9).

It would have been obvious to one of ordinary skill in the instant invention to modify Misumi et al., by the aforementioned teachings, for the purpose of providing an enclosed, and efficient in ejection system.

Allowable Subject Matter

Claims 4-10 and 18-24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter. The primary reasons for indication of allowable subject matter is Claims 4-10 and 18-24 are not taught by the prior art as such:

4. The ink jet head of claim 1, wherein the frame shape member comprises a first protrusion member and a second protrusion member on inner walls of both ends of the frame shape member, respectively, so as to face each other, the first protrusion member comprising the first protrusion pair and one protrusion of the second protrusion pair, the second protrusion member comprising the first protrusion pair and the other protrusion of the second protrusion pair;

5. The ink jet head of claim 4, wherein each of the first protrusion member and the second protrusion member further comprises an abutment portion on which the back end surface of the nozzle tip abuts;

6. The ink jet head of claim 5, wherein the first protrusion pair is arranged on the abutment portion perpendicularly;

7. The ink jet head of claim 5, wherein the second protrusion pair is arranged on the abutment portion perpendicularly;

8. The ink jet head of claim 1, wherein the frame shape member is made of at least one selected from aluminum, resin, magnesium and silver;

9. The ink jet head of claim 1, wherein the frame shape member is formed as one body by die-casting;

10. The ink jet head of claim 9, wherein the first protrusion pair and the second protrusion pair are formed by cutting process;

18. The ink jet printer of claim 15, wherein the frame shape member comprises a first protrusion member and a second protrusion member on inner walls of both ends of the frame shape member, respectively, so as to face each other, the first protrusion

member comprising the first protrusion pair and one protrusion of the second protrusion pair, the second protrusion member comprising the first protrusion pair and the other protrusion of the second protrusion pair;

19. The ink jet printer of claim 18, wherein each of the first protrusion member and the second protrusion member further comprises an abutment portion on which the back end surface of the nozzle tip abuts;

20. The ink jet printer of claim 19, wherein the first protrusion pair is arranged on the abutment portion perpendicularly;

21. The ink jet printer of claim 19, wherein the second protrusion pair is arranged on the abutment portion perpendicularly;

22. The ink jet printer of claim 15, wherein the frame shape member is made of at least one selected from aluminum, resin, magnesium and silver;

23. The ink jet printer of claim 15, wherein the frame shape member is formed as one body by die-casting;

24. The ink jet printer of claim 23, the first protrusion pair and the second protrusion pair are formed by cutting process.

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Contact Information

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Raquel Y. Gordon, whose telephone number is (571) 272-2145. The Examiner can normally be reached on M Tu Th and F 8:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. A fax number is available upon request.

Any inquiry of a general nature or relating to the status of this application or proceeding may be directed to the Examiner or Supervisor.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Raquel Y. Gordon
Primary Examiner
Art Unit 2853
February 15, 2005

**RAQUEL GORDON
PRIMARY EXAMINER**